Space Weather Forecast

Issued on Thursday, 13 October 2022 at 01:24 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of Moderate class X-ray flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with only common class flares observed. These are mainly from the moderately sized region in the northwest, including one long lasting flare early on the 12th. This region has shown some simplification as it approaches the western limb, with visible spots appearing to shrink in size, and perhaps a simpler magnetic structure developing. The other region to the north of this one, remained a unipolar spot. Common class-flaring was also observed from a further region, also in the northwest quadrant, but closer to the centre disc. This remains a smaller and simpler region. No Earth directed coronal mass ejections (CMEs) were observed, however the Earth-facing Sun has many "filaments". These are lines of material held together due to the Sun's magnetic field, and can be a source of CME's, without significant flares. These will be monitored for any potential lift and so CME generation.

Solar Wind / Geomagnetic Activity: The solar wind persisted at 350-400 km/s as Earth continues within the ambient slow wind. The total magnetic field was weak, with the north-south field predominantly in the southward direction (negative) but too weak to result in any notable geomagnetic activity. Geomagnetic activity was Quiet.

Energetic Particles / Solar Radiation: Despite Moderate flaring from the large sunspot on previous days, the count rate of energetic particles (high energy protons) remained at background levels. Consequently no solar radiation storms occurred.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be Low to Moderate, with the main risk of Moderate flares from the moderately sized region in the northwest. No significant regions are expected to rotate onto the visible disc during the forecast period.

Solar Wind / Geomagnetic Activity: There is a CME that is likely to miss Earth tomorrow (14th), has a small chance of giving a peripheral influence as it passes. Otherwise Earth will likely see background winds persisting, before the arrival of the fast winds from a coronal hole late tomorrow or more likely during day 3 (15th). Geomagnetic activity will be mostly Quiet with a chance of isolated Unsettled intervals, perhaps increasing to Active with any fast wind arrival.

Energetic Particles / Solar Radiation: The count rate of energetic particles is except to remain at background, but could rise in response to any large flares, mainly from the sunspot in the northwest. This gives a very slight chance of exceeding the S1/Minor Radiation Storm threshold.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.

Met Office

Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	20	10
Very Active	R3 to R5 X	No	2	2	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	1
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.